

Notice of Allowability

Application No.

10/626,726

Examiner

Nhan T. Tran

Applicant(s)

NISHIO ET AL.

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendments filed 10/9/2007 and interview on 11/8/2007.
2. ☒ The allowed claim(s) is/are 1-6 and 11.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 10/9/2007 (in addition to the following Examiner's amendment), with respect to claims 1-6 and 11 have been fully considered and are persuasive. The rejection of claims 1, 2, 5-6 & 11 has been withdrawn.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/14/2007 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Election/Restrictions

3. Because independent claim 1 is allowable, the restriction requirement between Species I (Fig. 2) and Species II (Fig. 4), as set forth in the Office action mailed on 2/6/2007, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable claim. **Claims 3 & 4** directed to Species II are **no longer withdrawn** from consideration because the claims require all the limitations of the allowable claim 1. Although claim 1 has been amended, the subject matter of claim 1 is still generic to claims 3 & 4.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with **Michele Connell** (Reg. No. 52,763) on 11/8/2007.

The application has been amended as follows:

In the claims:

(Please note that the amendments are shown in underline and/or strikethrough)

Claim 1 (currently amended): A semiconductor integrated circuit, comprising:

a differential calculating unit which obtains a differential between a value of a pixel of interest and a value of an adjacent pixel with respect to each of four neighboring pixels contained in an image signal supplied from an image sensor;

a dead-zone generating unit which defines a predetermined range of pixel values; and

a comparison unit which checks whether the differential falls outside the predetermined range with respect to each of the four neighboring pixels,

wherein contour enhancement is applied to the pixel of interest in response to a determination by the comparison unit that the differential falls outside the predetermined range with respect to at least one of the four neighboring pixels,

wherein an ~~said~~ enhancement value generating unit selects a differential having a largest absolute value among each said differential corresponding to the four neighboring pixels, and performs said contour enhancement in response to ~~size of~~ the differential having the largest absolute value,

and wherein said contour enhancement is not performed if a largest differential among each said differential and a smallest differential among each said differential have opposite signs but have an identical absolute value regardless of whether the largest differential and the smallest differential fall outside the predetermined range.

Claim 2 (currently amended): The semiconductor integrated circuit as claimed in claim 1, wherein said ~~further comprising a~~ enhancement value generating unit which obtains an enhancement value based on differentials between the value of the pixel of

interest and the values of the neighboring ~~surrounding~~ pixels, and said enhancement value generating unit adds ~~adding~~ the enhancement value to the value of the pixel of interest in response to the determination by the comparison unit that the differential falls outside the predetermined range.

Claim 4 (~~Withdrawn~~ currently Amended): The semiconductor integrated circuit as claimed in claim 1, wherein said differential calculating unit obtains the differential by using only a green-color component among a plurality of color components of the image signal, and said enhancement value generating unit obtains an ~~the~~ enhancement value by using only the green-color component.

Claim 6 (currently amended): The semiconductor integrated circuit as claimed in claim 1, further comprising a luminance signal generating unit which obtains a luminance component from a plurality of color components of the image signal, wherein said differential calculating unit obtains the differential by using only the luminance component, and said enhancement value generating unit obtains an ~~the~~ enhancement value by using only the luminance component.

Claim 11 (currently amended): A method of enhancing contours, comprising the steps of:

obtaining a differential between a value of a pixel of interest and a value of an adjacent pixel with respect to each of four neighboring pixels contained in an image signal supplied from an image sensor;

defining a predetermined range of pixel values;

checking whether the differential falls outside the predetermined range with respect to each of the four neighboring pixels; and

applying contour enhancement to the pixel of interest in response to a determination that the differential falls outside the predetermined range with respect to at least one of the four neighboring pixels, wherein a differential having a largest absolute value among each said differential corresponding to the four neighboring pixels is selected, and said contour enhancement is performed in response to ~~size of~~ the differential having the largest absolute value, and wherein said contour enhancement is not performed if a largest differential among each said differential and a smallest differential among each said differential have opposite signs but have an identical absolute value regardless of whether the largest differential and the smallest differential fall outside the predetermined range.

Allowable Subject Matter

5. Claims 1-6 & 11 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the prior art of record fails to teach or fairly suggest the combination of all limitations required in claim 1 that includes "**an enhancement value**

generating unit selects a differential having a largest absolute value among each said differential corresponding to the four neighboring pixels, and performs said contour enhancement in response to the differential having the largest absolute value, and wherein said contour enhancement is not performed if a largest differential among each said differential and a smallest differential among each said differential have opposite signs but have an identical absolute value regardless of whether the largest differential and the smallest differential fall outside the predetermined range.”

Regarding claims 2-6, these claims are allowed as being dependent from claim 1.

Regarding claim 11, the prior art of record also fails to teach or fairly suggest the combination of all limitations of claim 11 that includes **“applying contour enhancement to the pixel of interest in response to a determination that the differential falls outside the predetermined range with respect to at least one of the four neighboring pixels, wherein a differential having a largest absolute value among each said differential corresponding to the four neighboring pixels is selected, and said contour enhancement is performed in response to the differential having the largest absolute value, and wherein said contour enhancement is not performed if a largest differential among each said differential and a smallest differential among each said differential have opposite**

signs but have an identical absolute value regardless of whether the largest differential and the smallest differential fall outside the predetermined range.”

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (571) 272-7371. The examiner can normally be reached on Monday - Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



NHAN T. TRAN
Patent Examiner